# ROTATORIA OF LOS ANGELES, CALIFORNIA, AND VICINITY, WITH DESCRIPTIONS OF A NEW SPECIES. 

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## INTRODUCTION.

The collections upon which this report is based were made by the writer from January to May, 1916. While the number of species listed is not large, the record is interesting in view of the fact that nothing is known of the Rotatoria of California; it is hoped that local students may take up the subject and extend the list.

Los Angeles is situated on a narrow, level plain intervening between the foot of the San Gabriel Mountains and the Pacific Ocean. The Los Angeles River, which passes through the city, has the usual characteristics of mountain streams; at times it is torrential and at other times its bed is practically dry.

On account of the narrowness of the level plain no large lakes exist, and as there are but two seasons, a rainy and a dry one, permanent pools and ponds are not numerous. The majority of the collections are consequently from artificial reservoirs and ornamental pools in and around the city. Through the kindness of Mr. Willi Mulholland I obtained access to the various storage reservoirs from which the water supply of the city is obtained.

Mr. H. K. Harring, of the United States National Museum, has cooperated in the determination of some of the species and added a note on Pleurotrocha daphnicola.

For convenience the different localities at which collections were made are referred to by numbers, as follows:

1. Permanent pool, about 1 acre in area, formed by surface drainage and overflow from a small artificial lake in East Lake Park, Los Angeles.
2. Slowly running water in Ballona Creek, a very small stream about 4 miles west of Los Angeles.
3. From service pipe of the city water supply.
4. Nigger Slough, a large body of water about 11 miles south of Los Angeles, supplied by surface drainage and melted snow from the San Gabriel Mountains.

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5. Edge of a swamp north of the town of Riverside.
6. Ornamental pool on alligator farm, near East Lake Park, Los Angeles.
7. Pool formed by the Los Angeles River at a point about 14 miles south of the city, on highway to Long Beach.
8. Artificial lake in West Lake Park, Los Angeles.
9. Artificial lake in Echo Park, Los Angeles.
10. Silver Spring reservoir, eastern section of Los Angeles, near Sunset Boulevard.
11. Buena Vista reservoir, Elysian Park, Los Angeles.
12. Ornamental fountain in St. James Place, Los Angeles.

## LIST OF THE SPECIES COLLECTED.

Notommata cerberus (Gosse), 12.
Notommata pachyura (Gosse) = Copeus pachyurus Gosse, 11.
Notommata tripus Ehrenberg, 10.
Taphrocampa annulosa Gosse, 1, 3, 6, 12.
Proales decipiens (Ehrenberg), 1, 6.
Pleurotrocha petromyzon Ehrenberg, 1, 3, 4, 5, 7.
Pleurotrocha daphnicola (Thompson)=Proales daphnicola Thompson, 4.

Eosphora najas Ehrenberg, 7. Not previously recorded from the United States.

Cephalodella catellina (Müller)=Diglena catellina (Müller), 1, 2, 6, 11.

Cephalodella forficula (Ehrenberg) $=$ Furcularia forficula Ehrenberg, 1, 2, 3, 6, 8, 12.

Diaschiza auriculata (Müller)= Diaschiza lacinulata (Müller), 1, 10.
Diaschiza forficata (Ehrenberg) = Diaschiza caeca Gosse, 2, 6.
Diaschiza gibba (Ehrenberg), 1, 2, 3, 4, 6, 9, 11, 12.
Diaschiza globata Gosse, 6.
Diaschiza gracilis (Ehrenberg), 5, 6.
Diaschiza hoodii Gosse, 1, 5, 6, 10. Not previously recorded from the United States.

Diaschiza tenuior Gosse, 1, 6, 10, 11.
Monommata orbis (Müller) = Furcularia longiseta (Müller), 5.
Dicranophorus forcipatus (Müller) = Diglena forcipata (Müller), 1, 2, 3, 6, 11 .

Encentrum felis (Müller)=Proales felis (Müller), 5.
Epiphanes senta (Müller) = Hydatina senta (Müller), 1.
Brachionus angularis Gosse, 1, 8, 9.
Brachionus angularis caudatus Barrois and Daday, 4, 8, 9.
Brachionus calyciflorus Pallas = Brachionus pala Ehrenberg, form dorcas Gosse, 1; form amphiceros Ehrenberg, 1, 4.

Brachionus capsuliflorus Pallas; form bakeri Ehrenberg, 1, 2, 3, $4,5,6,7,8,9,10,11,12$; form urceolaris Müller, 1, 5, 9 .

Brachionus patulus Müller=Brachionus militaris Ehrenberg, 3. Brachionus plicatilis Müller = Brachionus mülleri Ehrenberg, 8.
Brachionus variabilis Hempel, 2, 4.
This species, originally described from the Illinois River, at Havana, Illinois, was found very abundant. It is commensal on Daphnia longispina (Müller) and Ceriodaphnia longispina (Müller), which appears to have been unknown to Hempel; nearly every Daphnid carried about a number of these no doubt unwelcome guests, attached to the carapace. When swimming about by the action of its own cilia, Brachionus variabilis behaves very much as other species of this genus, but when deciding to use a Daphnid for conveyance, it attaches itself with astonishing rapidity, almost jumping upon the host. Some of the numerous varieties are illustrated on plate 40 , figures 1-5. The posterior spines are found in all lengths and in individuals of all ages; no evidence was observed that would tend to confirm Hempel's suggestion: that only the young have spines, which with advancing age are absorbed. As nothing similar has ever been reported for other species of the genus, it is probably safe to dismiss it as unfounded.

Brachionus variabilis may be easily recognized by the subquadrate plate projecting over the foot opening; it is therefore evident that the animal figured by Murray in Notes on the Natural History of Bolivia and Peru (p.26), does not belong to this species, but is no doubt one of the varieties of Brachionus capsuliflorus Pallas, probably the form usually called $B$. urceolaris.

Platyias quadricornis $($ Ehrenberg) $=$ Noteus quadricornis Ehrenberg, 3, 4.

Keratella cochlearis $($ Gosse $)=$ Anuraea cochlearis Gosse, 1, 4, 7, 9, 12 .

Keratella quadrata (Müller) = Anuraea aculeata Ehrenberg, normal form, 1, 3, 4, 7, 8, 10; form valga Ehrenberg, 1, 2, 3, 4, 7, 9.

Notholca striata (Müller), 1, 2, 3, 10.
Mytilina mucronata (Müller) = Salpina mucronata (Müller), 1, 6.
Mytilina ventralis (Ehrenberg)=Salpina ventralis Ehrenberg, normal form and form brevispina Ehrenberg, 11.

Euchlanis deflexa Gosse, 1, 3, 5, 6, 7, 10, 11.
Euchlanis dilatata Ehrenberg, 1, 2, 5, 6, 11.
Euchlanis lyra Hudson, 3, 10. Not previously recorded from the United States.

Euchlanis plicata Levander, 11.
As the figure accompanying the original description is somewhat diagrammatic, this apparently rare species has been illustrated on plate 41 , figures $1-3$. It has not previously been found in the United States.

Euchlanis pyriformis Gosse, 11.
Euchlanis triquetra Ehrenberg, 3, 5.

## LECANE ASPASIA, new species.

Plate 40, figs. 6-8.
The lorica is broadly oval and nearly parallel-sided anteriorly. The anterior dorsal and ventral edges are coincident and slightly convex; at the lateral edges they are produced as two small spines. The dorsal plate is ovate and its anterior margin slightly narrower than the ventral plate; its markings are moderately prominent and fairly regular. The ventral plate is at its widest point of the same width as the dorsal plate; it has a well-marked transverse fold some distance in front of the foot. The longitudinal markings are rather faint. The posterior segment of the body is broadly rounded posteriorly and projects slightly beyond the dorsal plate. The first foot joint is nearly parallel-sided and projects over the movable joint with a minute median rounded lobe. The movable joint is broad, rounded anteriorly and sharply constricted immediately in front of the toes. The coxal plates are approximately triangular. The toes are long, slender, and parallel-sided, ending in acutely pointed claws. The body is of more than average depth.

Total length $132 \mu$; length of lorica $94 \mu$; width of anterior spines 63 $\mu$, length of spines $4 \mu$; length of dorsal plate $82 \mu$, width at widest point $73 \mu$, width of anterior edge $54 \mu$; width of ventral plate $75 \mu$; length of toes without claw $30 \mu$, length of claw $8 \mu$; depth of body $50 \mu$.

Type.-Cat. No. 16832 , U.S.N.M., is from a pool on alligator farm, near East Lake Park, Los Angeles.

With the large number of species belonging to this genus, differing only in minor details, comparisons are of little value; the present species has some resemblance to Lecane arcula Harring, but is broader and stouter, as well as being considerably larger.

Lecane curvicornis $($ Murray $)=$ Cathypna curvicornis Murray, 7. Not previously recorded for the United States.

Lecane hornemanni (Ehrenberg) = Cathypna hornemanni (Ehrenberg), 11.

Lecane luna $($ Müller $)=$ Cathypna luna (Müller), 1, 2, 6, 10, 11, 12.
Monostyla bulla Gosse, 3, 5, 7, 12.
Monstyla closterocerca Schmarda, 1, 3, 5, 12.
Monostyla cornuta (Müller), 4.
Monostyla hamata Stokes, 3.
Monostyla lunaris Ehrenberg, 4, 10.
Monostyla quadridentata Ehrenberg, 4, 10.
Monostyla stenroosi Meissner $=$ Monostyla bicornis Stenroos, not of Daday. 3, 5. Not previously recorded for the United States.

Lepadella acuminata (Ehrenberg), 1, 11.
Lepadella patella (Müller), 1, 3, 5, 6, 7.
Lepadella rhomboides (Gosse), 1, 3.

Lepadclla triptera Ehrenberg, 6.
Colurella obtusa (Gosse), 1, 4, 5, 7, 9. 12.
Colurella uncinata (Müller), 3.
Squatinella mutica $($ Ehrenberg $)=$ Stephanops muticus Ehrenberg, 3, 5, 6, 12.

Trichotria pocillum $($ Müller $)=$ Dinocharis pocillum $($ Müller), 1, 5, 6, 10.

Trichotria tetractis $($ Ehrenberg $)=$ Dinocharis tetractis Ehrenberg, 2, $5,6,7,10$.

Wolga spinifcra $($ Western $)=$ Distyla spinifera Western, 4.
Lophocharis oxystcrnon $(G o s s e)=$ Metopidia oxysternon Gosse, 1, 3, 6 .

Macrochaetus collinsii $($ Gosse $)=$ Dinocharis collinsii Gosse, 5.
Scaritium longicaudum (Müller), 1, 3, 5, 8 .
Trichocerca longiseta $($ Schrank $)=$ Rattulus longiseta $($ Shrank $), 5$.
Trichocerca scipio (Gosse) = Rattulus scipio (Gosse), 5.
Diurclla brachyura (Gosse), 1, 6.
Diurella tigris (Müller), 1.
Diurella tenuior (Gosse), 1, 6, 11, 12.
Diurella weberi Jennings, 1, 2, 6.
Synchaeta cblonga Ehrenberg, 610.
Synchaeta pectinata Ehrenberg, 1, 4, 8, 10.
Synchacta stylata Wierzejski, \&.
Synchaeta tremula (Müller), 1, 2, 3, 5, 9, 10, 12.
Polyarthra trigla Ehrenberg = Polyarthra platyptera Ehrenberg, 1, 2, 4, 6, 7, 8, 9, 11, 12.

Aspilanchna brightwellii Gosse, 1, 2, 4, 9.
Asplanchna priodonta Gosse, 1, 4.
Asplanchnopus multiceps (Schrank), 4.
Testudinella patina $($ Hermann $)=$ Pterodina patina $($ Hermann $), 3$.
Pedalia mira $($ Hudson $)=$ Pedalion mirum Hudson, 3, 4.
Filinia longiseta (Ehrenberg) $=$ Triarthra longiseta Ehrenberg, 8.
Floscularia ringens $($ Linnaeus $)=$ Melicerta ringens $($ Linnaeus $), ~ 1,5$, 6, 10, 12.

Ptygura crystallina $($ Ehrenberg) $=$ Oecistes crystallinus Ehrenberg, 6, 12.

Ptygura mucicola $($ Kellicott $)=$ Oecistes mucicola Kellicott, 12.
Ptygura longipes $($ Wills $)=$ Oecistes umbella Hudson, 6. Not previously found in the United States.

Ptygura velata $($ Gosse $)=$ Oecistes velatus Gosse, 6, 10.
Collotheca cornuta $($ Dobie $)=$ Floscularia cornuta Dobie, 1, 6.
Collotheca coronetia $($ Cubitt $)=$ Floscularia coronetta Cubitt, 1, 6.
Collotheca ornata $($ Ehrenberg $)=$ Floscularia ornata Ehrenberg, 6.
No study was made of the Bdelloida.

## PLEUROTROCHA DAPHNICOLA (Thompson). ${ }^{1}$

Plate 41, figs. 4-9.
Proales daphnicola Thompson, Science Gossip, vol. 28, 1892, p. 220, text figure.Murray, Trans. Royal Soc. Edinburgh, vol. 45, 1906, p. 179, pl. 6, fig. 26.
?Pleurotrocha sigmoidea Skоrıкov, Trav. Soc. Nat. Kharkow, vol. 30, 1896, p. 284, pl. 7 , fig. 8.
Thompson's original description is very good and there is but little to add to Mr. Myers's figures of the animal, plate 41, figures 4 and 5; Thompson calls attention to the "remarkably long" foot glands with "their ducts plainly opening as projecting tubules at the extremity of the large, swollen toes." At the base of the toe there is a fairly large mucus reservoir.

The trophi, figures 6 to 9 , present an interesting modification of the virgate or "pumping" type. The rami are approximately hemispherical, cuplike structures, functioning as the cylinder of the "pump"; of the usual transverse ridges only the basal one is present, taking the form of a prominent, hornlike process. On the inner surfaces of the rami, from the tip of the horn to the posterior or dorsal point, there is a series of close-set, needlelike teeth, shown in figure 8. These teeth obviously play no part in the mastication of the food, but they explain fully how the animal attaches itself to the skin of worms, as reported by Murray in the paper cited above. The unci rest on the dorsal portions of the rami, in the sinus behind the ventral horn. Each uncus has five teeth, two ventral, pointed, and three dorsal, with rounded, knoblike tips.

## EXPLANATION OF PLATES.

Plate 40.
Fig. 1. Brachionus variabilis, dorsal view; page 475.
2. Brachionus variabilis, dorsal view.
3. Brachionus variabilis, dorsal view.
4. Brachionus variabilis, ventral view.
5. Brachionus variabilis, lateral view.
6. Lecane aspasia, dorsal view, page 476.
7. Lecane aspasia, ventral view.
8. Lecane aspasia, lateral view.

## Plate 41.

Fig. 1. Euchlanis plicata, lateral view; page 475.
2. Euchlanis plicata, dorsal view.
3. Euchlanis plicata, transverse section of body.
4. Pleurotrocha daphnicola, lateral view; page 478.
5. Pleurotrocha daphnicola, dorsal view.
6. Pleurotrocha dahpnicola, trophi, ventral view.
7. Pleurotrocha daphnicola, trophi, anterior view.
8. Pleurotrocha daphnicola, internal surface of left ramus.
9. Pleurotrocha daphnicola, trophi, lateral view.

